specially treating north-west Europe, most of the principles and processes elucidated will apply to at least the temperate zones of the Earth.

F. Raymond Fosberg
(Washington, D.C.)

Reconstruction Following Disaster, Edited by J. EUGENE HAAS, ROBERT W. KATES & MARTYN J. BOWDEN. The MIT Press, Cambridge, Massachusetts, and London, U.K.: xxxv + 331 pp., figs & tables, 23 X 14.7 X 2.5 cm, paper cover [mimeogr., no price indicated], 1977.

Classical ecologists, perhaps, find it difficult to include disaster among their areas of preoccupation. Maybe this is because natural disasters are treated as God-given facts, or because they are considered beyond the scope of traditional disciplines. Increasingly, however, we are confronted with the potential threat of ecodisasters (*see,* for example, the International Conferences on Environmental Future held in Finland in 1971 and Iceland in 1977). Increasingly, also, it is realized that natural disasters such as floods can often be triggered by human activities which disturb the ecosystem (for example, the recent major floods in India, which have cost so much in human lives), and finally, perhaps, there is increasing awareness that environmental impact and ecological disturbance can occur as much, or even more, from rare events of great magnitude than from the daily 'insult' of Man-made activities.

It is therefore particularly instructive that the MIT Press Environmental Studies Series should have published this book which details the disasters of floods and earthquakes that have struck Rapid City and San Francisco in the conterminous United States, Anchorage in Alaska, and Managua in Nicaragua. The analysis of the impact of such disasters, and the reconstruction and rehabilitation efforts, have many lessons for the management and abatement of environmental impacts of less spectacular origin.

Michael G. Royston
(Nr Geneva, Switzerland)

Energy: The Solar Prospect, by DENIS HAYES. (Worldwatch Paper 11.) Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, D.C.. 20036: 79 pp., 21.7 X 14 X 0.5 cm, paper cover, US $2, 1977.

Redefining National Security, by LESTER R. BROWN. (Worldwatch Paper 14.) Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, D.C. 20036: 46 pp., figs, 21.5 X 14 X 0.4 cm, paper cover, US $2, 1977.

Energy for Development: Third World Options, by DENIS HAYES. (Worldwatch Paper 15.) Worldwatch Institute, 1776 Massachusetts Avenue NW, Washington, D.C. 20036: 43 pp., 21.5 X 14 X 0.3 cm, paper cover, US $2, 1977.

The Worldwatch Institute, in Washington D.C., is much preoccupied with the relationship between energy and environment, as is exemplified by such samples from their excellent series of Worldwatch Papers as the following:

No. 11—'Energy: The Solar Prospect', which provides a well-referenced and balanced survey of this subject;

No. 14—'Redefining National Security', which relates ecological deterioration, climatic modification, and global food supply, to the connection between energy and environment; and

No. 15—'Energy for Development: Third-World Options', which treats the issue in those areas where it is manifest in its most acute form, namely the Third World.

It is significant that the first Worldwatch Paper of all was 'The Other Energy Crisis: Firewood', which became a classic in the area of the interaction between energy and ecology. In brief, all the Worldwatch Papers are to be highly recommended.

Michael G. Royston
(Nr Geneva, Switzerland)

Food, Climate, and Man, Edited by MARGARET R. BISWAS & ASIT K. BISWAS. (Foreword by Mostafa Kamal Tolba.) John Wiley & Sons, New York–Chichester–Brisbane–Toronto: xxiii + 285 pp., figs & tables, 23.5 X 16 X 2.1 cm, [no price indicated], 1979.

The foreword of this informative book introduces the concept of 'development without destruction', which is related to ten points concerning strategies to increase food production. The book itself has ten chapters, by ten experts who elaborate on that latter theme.

The first chapter presents the challenge of modern climatic events (those of 1972, for instance) and the need for wider use of climatic information among decision-makers—from the individual farmer to international grain-traders. In contrast, the last chapter (the 10th) speculates on the future of Man, his penchant for know-how rather than know-what, and his need to accept a global responsibility for improving 'the human quality'.

In between these general views that commence and end the book there is a wealth of data, enlightening information, and analysis, on the primary areas related to food production. Chapter two presents development strategies and is mainly concerned with 'developing' countries where food problems may be critical and improvements, all too often, are institutionally constrained. Chapter three discusses water resources, stresses the difficulties of technology transfer, and deals with the needs for reducing pollution and for better management. Chapters four and five consider energy and agriculture for food production, covering energy needs, use, and conservation, in some detail.

Chapter six deals with the environment as a whole and illustrates the dangers of seeking to alleviate a food problem in isolation without due regard for the full web of environmental and ecological interdependence. Chapter seven reviews soil reclamation and shows the vital importance of proper land-use planning. It stresses the great potential of the arid zones of the planet—the need to stop desertification and fully evaluate the problems along with the great benefits of irrigation. Chapter eight reviews local climatic problems at some length, is slightly behind the most recent ozone layer results, and is *au courant* on the potential, for climatic change, of increases in atmospheric carbon dioxide. Chapter nine then surveys the general role of climate in agriculture and economic development,

I enjoyed this book. It is well organized and well written. It contains ideas and concepts for the generalist and data and questions to challenge the specialist. A

valuable contribution to the Environmental Science and Technology series, it is recommended to all who are concerned with problems of the modern world—particularly those of Food, Climate, and Man.

Byron W. Boville
(Geneva, Switzerland)

The One-straw Revolution, by MASANOBU FUKUOKA. English translation published by Rodale Press, Emmaus, Pennsylvania: xxviii + 181 pp., illustr., 21 X 13.5 X 2.5 cm, £4.75, 1978.

Having, in the last year or two, reached the stage in my vegetable garden where I have more or less abandoned digging, fertilizing, and composting, I was delighted to come across this short book, written by someone who has been growing grain crops by very similar methods, on the same piece of ground, for 30 years, with apparently excellent results. His four principles of 'no cultivation, no chemical fertilizer or prepared compost, no weeding by tillage or herbicides, and no dependence on chemicals', have led him towards a system which requires very little input of energy or scarce resources, and yet gives yields that are comparable with those of the best of his neighbours' farms.

The Author is, perhaps rightly, very scathing about the narrow-minded approach of many scientists, and adopts an almost religious attitude to farming, which I personally cannot quite accept. One might have welcomed some figures on the amount of phosphorus, potassium, etc., taken out of the system each year, and some idea as to whether or not—and if so, how—this is replaced at an adequate rate to allow his method to continue indefinitely. It is not stated explicitly whether or not human wastes are returned to the fields. Loss of seed before germination, and the occurrence of particular pests and diseases, have all been surmounted by relatively simple means, involving gradual adjustment of his methods over the years. As the Author says, he seeks no victory over Nature—rather does he wish to live with Nature, as far as possible.

This, or some similar but better-documented book, should be required reading for all aspiring agronomists and for those already practicing that 'art' who are not totally 'hooked' on the philosophy of bigger and better tractors, sterile soil, and tonnes of chemicals.

Rodney Helliwell
(Wooton-under-Edge, United Kingdom)

World Wildlife Fund Yearbook 1977–78, Edited by PETER F. R. JACKSON. World Wildlife Fund, 1110 Morges*, Switzerland: 289 pp., 21 X 14.8 X 1.8 cm, stiff paper cover, [no price or date of publication indicated but apparently Sw. Frs. 15 and 1978].

The work of the World Wildlife Fund (WWF), which acts in close association with the International Union for Conservation of Nature and Natural Resources (IUCN) and other international bodies in specialized fields, is generally accepted as being of importance to conservationists, so that its Yearbook is eagerly awaited by many. The present volume, the ninth in the series, edited as before by Peter F. R. Jackson, is an extensive review of the many projects which WWF supports, and indicates how its financial resources are allocated.

As pointed out by the President, John H. Loudon, in his introduction, every year there are certain priorities, such as the conservation of the seas and marine life, the major problem presented to the world by the gradual disappearance of tropical rain-forests, the progressive extinction of large mammals such as elephants, the preservation of whales, and so on. But it is not always realized that there are many other areas in which Man is steadily destroying his heritage, and where it is becoming a matter of urgency to make him aware of the problems which he faces if, for example, the many species that are now on the danger list are not to become extinct in the foreseeable future. The areas defined in this report themselves involve a record years' expenditure of about 4,500,000 US dollars relating to 417 national and international projects in 85 countries.

This Yearbook, therefore, makes fascinating reading for everyone who is directly involved or interested in the conservation of wildlife, both animal and vegetable, and it is a pity that the type used and the layout makes it a little trying to read for any length of time. Nevertheless the effort must be made, for the situation should be studied as widely as possible, and WWF supported financially as much as possible.

The expenditure needed for the establishment and support of national parks and reserves alone is colossal, and this is an important part of the work of WWF. Since 1961, it has helped to establish and maintain conservation areas throughout the world totalling some 1,300,000 square kilometres.

Apart from membership of WWF, the purchase of this small volume, at the modest price of 15 Sw. Frs, is a small way in which to support the vital and important aims of the World Wildlife Fund.

Clifford B. Holliday
(Lausanne, Switzerland)

Biogeochemistry of a Forested Ecosystem, by G. E. LIKENS, F. H. BORMANN, R. S. PIERCE, J. S. EATON & N. M. JOHNSON: Springer-Verlag, Berlin–Heidelberg–New York: xii + 146 pp., 29.5 X 15 X 1 cm, 37 figs, soft cover, DM 22.30 or US $ 9.80, 1977.

Anybody who has followed the appearance of the numerous papers resulting from the Hubbard Brook ecosystem study will welcome this book, for it brings together much of the information that was hitherto scattered through a number of journals. The study itself first focused on the nutrient inputs to, and outputs from, a small forested watershed in New Hampshire, and then has gone on to measure aspects of the structure, function, and dynamics, of the forest itself—including studies of deforestation and subsequent recolonization. This book, however, is the first of a number of projected ones and deals only with the biogeochemistry of the intact watershed; separate chapters evaluate the nutrient cycling and other flows through the system. Thus the hydrology, chemistry, input-output budgets, weathering, and nutrient cycles, each receive a chapter, and then the Authors compare the Hubbard Brook system with other forested ecosystems in the world before reaching their discussion and conclusions.

Naturally, not all the numerical details from the papers are included here, but there is plentiful evidence

*Now moved to Avenue du Mont Blanc, 1196 Gland, Switzerland.—Ed.